Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
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MATHEMATICS **0580/32**

Paper 3 (Core) **October/November 2024**

2 hours

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 104.
- The number of marks for each question or part question is shown in brackets [ ].

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1 **(a)** Onions cost \$1.85 per kilogram and potatoes cost \$2.34 per kilogram.
Sophie buys 2.4 kg of onions and 4.5 kg of potatoes.

View solution

Work out how much change she receives from \$20.

\$ ..... [3]

(b) Sophie gets on a bus at 1047 and she gets off the bus 36 minutes later.

View solution

Work out the time she gets off the bus.

..... [1]

(c) Sophie uses two-thirds of a litre of milk each day.
Milk is sold in 2-litre bottles.

View solution

Show that she needs at least 3 bottles to have enough milk for 7 days.

[2]

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(d) One month, Helen sells phones and computers in the ratio

number of phones : number of computers = 3 : 5.

View solution

She sells 40 computers.

Work out how many phones she sells.

..... [2]

(e) In 2022 Helen sells 520 phones.
In 2023 she sells 35% more phones than in 2022.

View solution

Calculate the number of phones she sells in 2023.

..... [2]

(f) A television costs $840 in the USA.
The same television costs 3549 ringgits in Malaysia.
The exchange rate is $1 = 4.2 ringgits.

View solution

In which country is the television cheaper and by how many dollars?

Cheaper in ..... by $..... [2]

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2 **(a)**

3.142	$\sqrt{87}$	14	41	56	117	121

View solution

From this list, write down

(i) an odd number

..... [1]

(ii) a factor of 28

View solution

..... [1]

(iii) a square number

View solution

..... [1]

(iv) a prime number

View solution

..... [1]

(v) a multiple of 9.

View solution

..... [1]

(b) Write down the value of 5^0.

View solution

..... [1]

(c) Write 60 as a product of its prime factors.

View solution

..... [2]

(d) Calculate the value of $\sqrt[3]{157\,464}$.

View solution

..... [1]

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(e) By rounding each number in the calculation correct to 1 significant figure, find an estimate for the value of

$$\frac{67.8 \times 2.38}{4.803 + 29.87}.$$

View solution

You must show all your working.

..... [2]

(f) **(i)** 9.78×10^8 2.04×10^9

View solution

Which of these two numbers is larger?
Give a reason for your answer.

..... is larger because ..... [1]

(ii) Calculate $1.732 \times 10^3 \div 5.73 \times 10^{-1}$.
Give your answer in standard form.

View solution

..... [2]

(g) Two cars go round a track.
One car completes each lap of the track in 96 seconds.
The other car completes each lap in 120 seconds.
Both cars start a lap together at 08 37.

View solution

Find the next time when both cars start a lap together.

..... [3]

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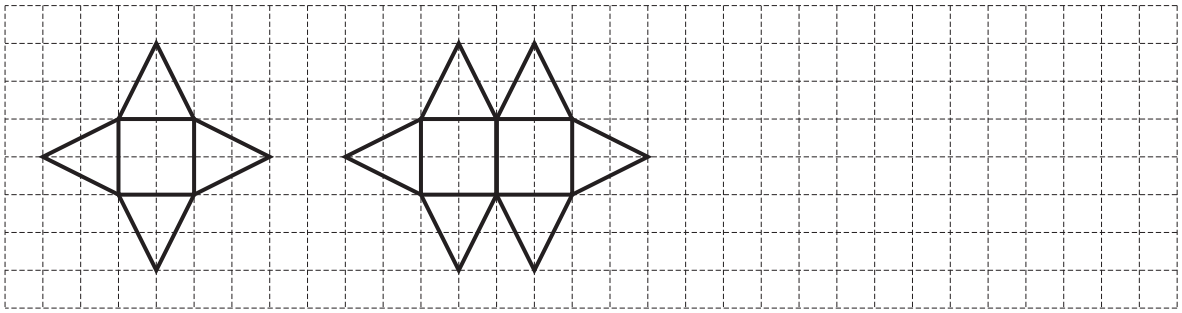
3 **(a)** A sequence of shapes is made with squares and triangles.

View solution



Shape 1 Shape 2 Shape 3

(i) On the grid, draw Shape 3. [1]

(ii) Find the number of triangles in Shape 5.

View solution

..... [1]

(b) These are the first four terms of a sequence.

View solution

32 25 18 11

(i) Find the next two terms.

..... , ... [2]

(ii) Write down the term to term rule for this sequence.

View solution

..... [1]

(c) (i) 5, 8, 11, 14, ...

View solution

Find the nth term of this sequence.

..... [2]

(ii) 1, 8, 27, 64, ...

View solution

Find the nth term of this sequence.

..... [1]

4 **(a)** Calculate the volume of a cylinder with radius 7.8 cm and height 15 cm.

View solution

..... cm^3 [2]

(b) A cube has a volume of 3375 cm^3.

View solution

Calculate the surface area of this cube.

..... cm^2 [3]

(c) Area $A = 37\,000\ cm^2$ Area $B = 5.4\ m^2$

View solution

Which of these two areas is the larger?
You must show all your working.

Area ..... [2]

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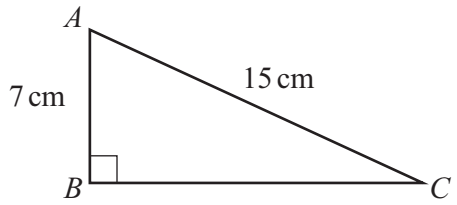
(d) The diagram shows a right-angled triangle ABC.

View solution



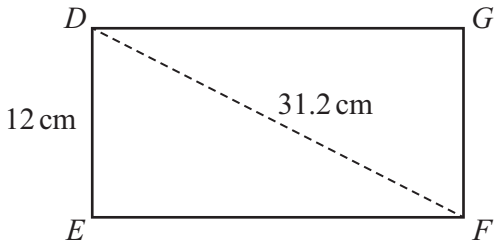
NOT TO SCALE

Calculate angle ACB.

Angle ACB = ... [2]

(e) The diagram shows a rectangle $DEFG$.

View solution



NOT TO SCALE

$DE = 12$ cm and $DF = 31.2$ cm.

Calculate the area of the rectangle $DEFG$.

..... cm^2 [4]

5 **(a)** Students solve a puzzle by making guesses.
The table shows the number of guesses that each of 40 students make.

View solution

Number of guesses	1	2	3	4	5	6
Frequency	2	4	8	7	12	7

(i) Find the mode.

..... [1]

(ii) Calculate the mean.

View solution

..... [3]

(b) In another puzzle each student gets a score.
These are the scores for 12 students.

View solution

17	21	24	32	27	11
26	18	10	29	14	24

(i) Complete the stem-and-leaf diagram for these scores.

1	
2	
3	

Key : 1 | 7 represents 17

[2]

(ii) Find the median.

View solution

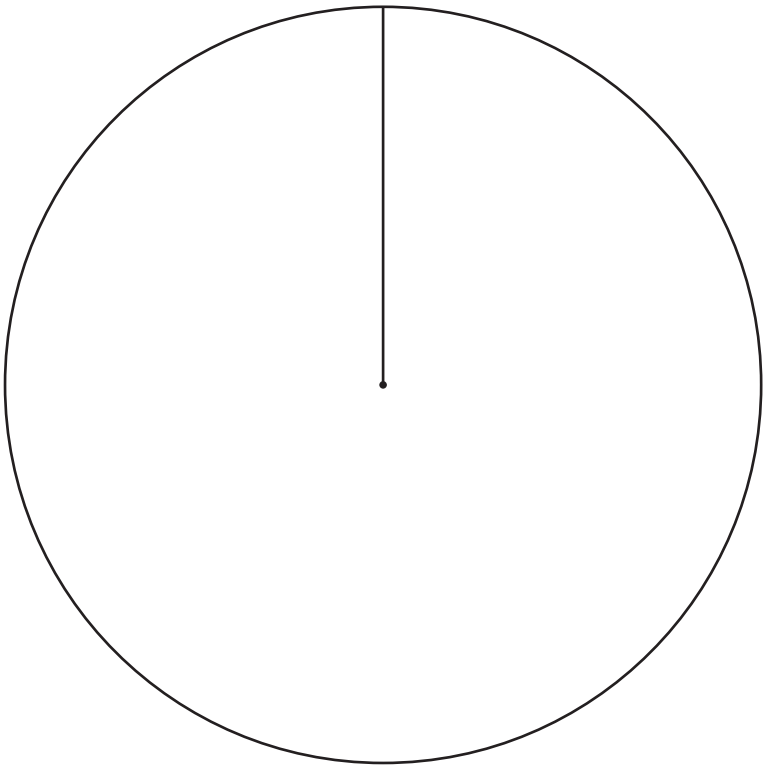
..... [1]

(c) A different puzzle has three outcomes: win, draw or lose.
The table shows the outcomes for 30 students.

View solution

Outcome	Frequency
Win	9
Draw	14
Lose	7

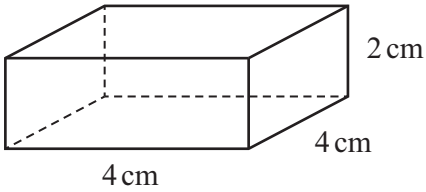
Complete the pie chart to show this information.



[4]

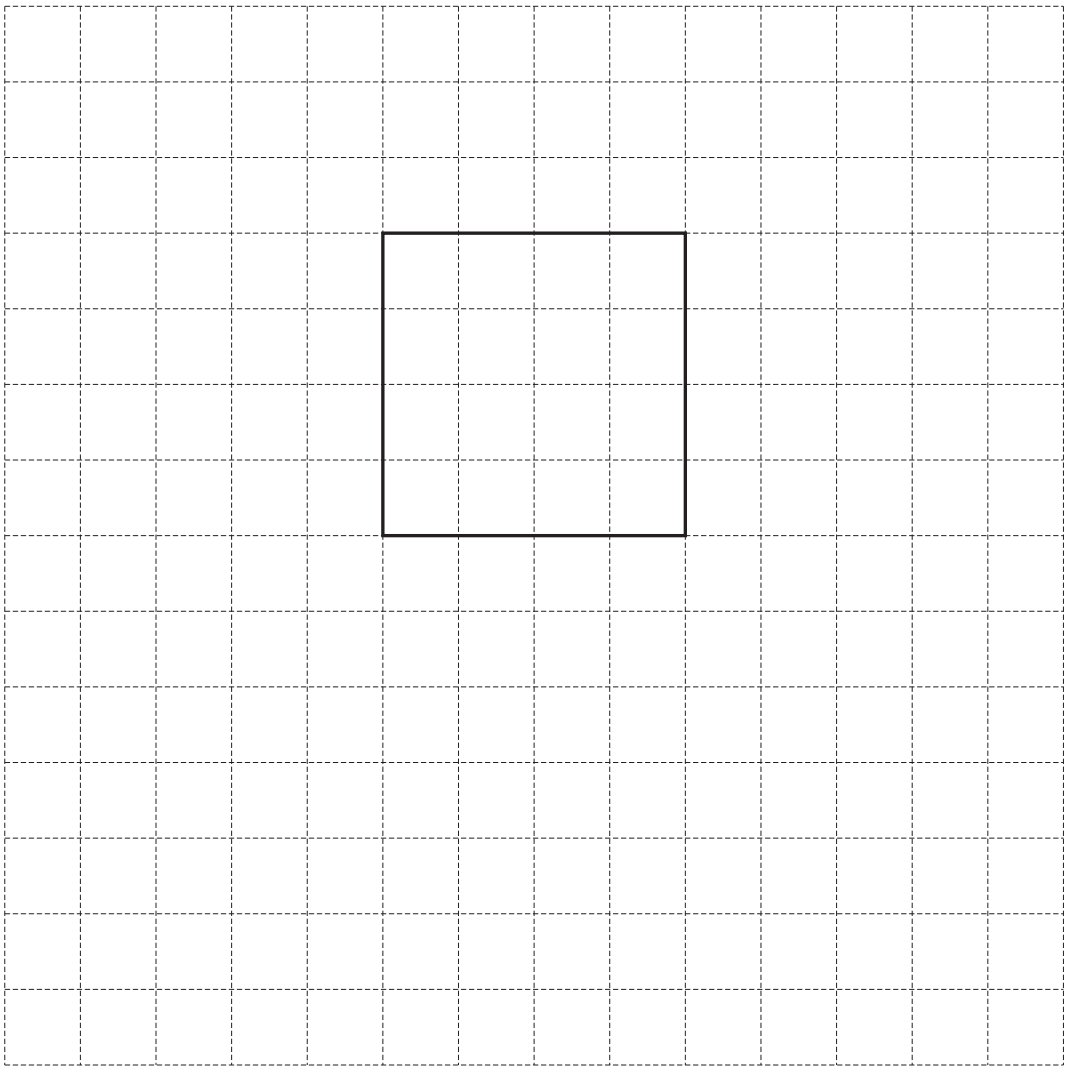
6 **(a)** The diagram shows a cuboid.

View solution



NOT TO SCALE

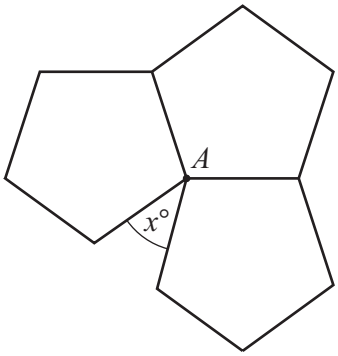
On the 1 cm^2 grid, complete a net of this cuboid.
One face has been drawn for you.



[3]

(b) Three regular pentagons meet at point A.

View solution



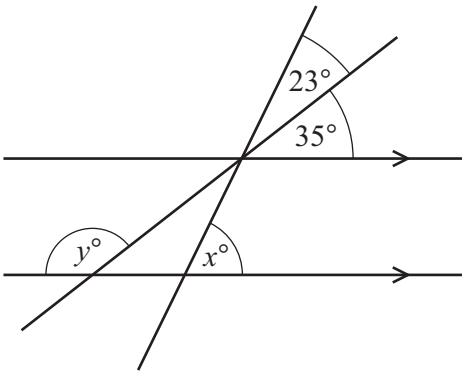
NOT TO SCALE

Work out the value of x.

$x =$ ..... [3]

(c) The diagram shows two parallel lines and two straight lines.

View solution



NOT TO SCALE

(i) Find the value of x.
Give a geometrical reason for your answer.

$x =$ ..... because ..... [2]

(ii) Find the value of y.

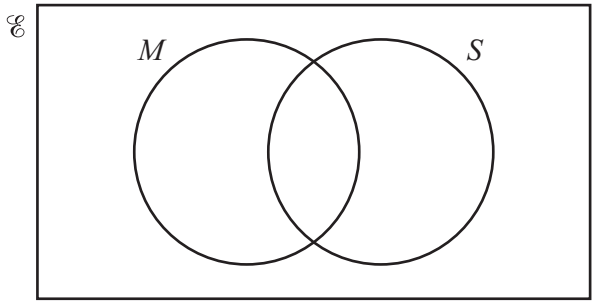
View solution

$y =$ ..... [2]

7 **(a)** $\mathscr{E}$ = {students in a group}
M = {students who pass the mathematics test}
S = {students who pass the science test}

View solution

142 students are in the group.
105 students pass the mathematics test.
82 students pass the mathematics test and pass the science test.
17 students do **not** pass the mathematics test and do **not** pass the science test.



(i) Complete the Venn diagram. [2]

(ii) Find $n(M \cup S)$.

View solution

..... [1]

(iii) One of these students is picked at random.

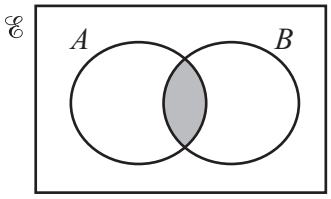
View solution

Find the probability that this student passes the science test but does **not** pass the mathematics test.

..... [1]

(b)

View solution



Use set notation to describe the shaded region.

..... [1]

(c) In a town, the number of students, n, who take the science test is 10 600, correct to the nearest hundred.

View solution

Complete this statement about the value of n.

..... $\leqslant n <$ ..... [2]

(d) The table shows the number of students in another town who took the science test in 2022 and 2023.

View solution

Year	2022	2023
Number of students	15 800	17 064

Calculate the percentage increase in the number of students from 2022 to 2023.

..... % [2]

(e) The number of students who took the mathematics test in 2022 is 18 400.
The ratio number of students who passed : number of students who did **not** pass is 4 : 1.

View solution

Work out the number of students who passed.

..... [2]

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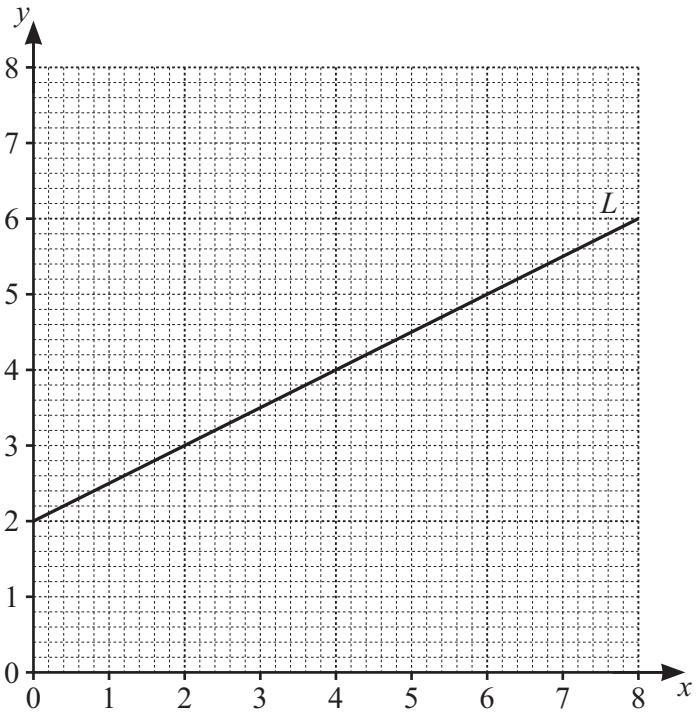
8 (a)

View solution



(i) Find the equation of line L in the form $y = mx + c$.

$y =$ ..... [2]

(ii) **(a)** Complete the table of values for $y = 8 - 2x$.

View solution

x	0	2	4
y		4	

[2]

(b) On the grid, draw the graph of $y = 8 - 2x$ for $0 \leqslant x \leqslant 4$. [1]

(iii) Find the coordinates of the point where line L intersects the graph of $y = 8 - 2x$.

View solution

(..... , ...) [1]

(b) **(i)** Complete the table of values for $y = x^2 - 4x - 4$.

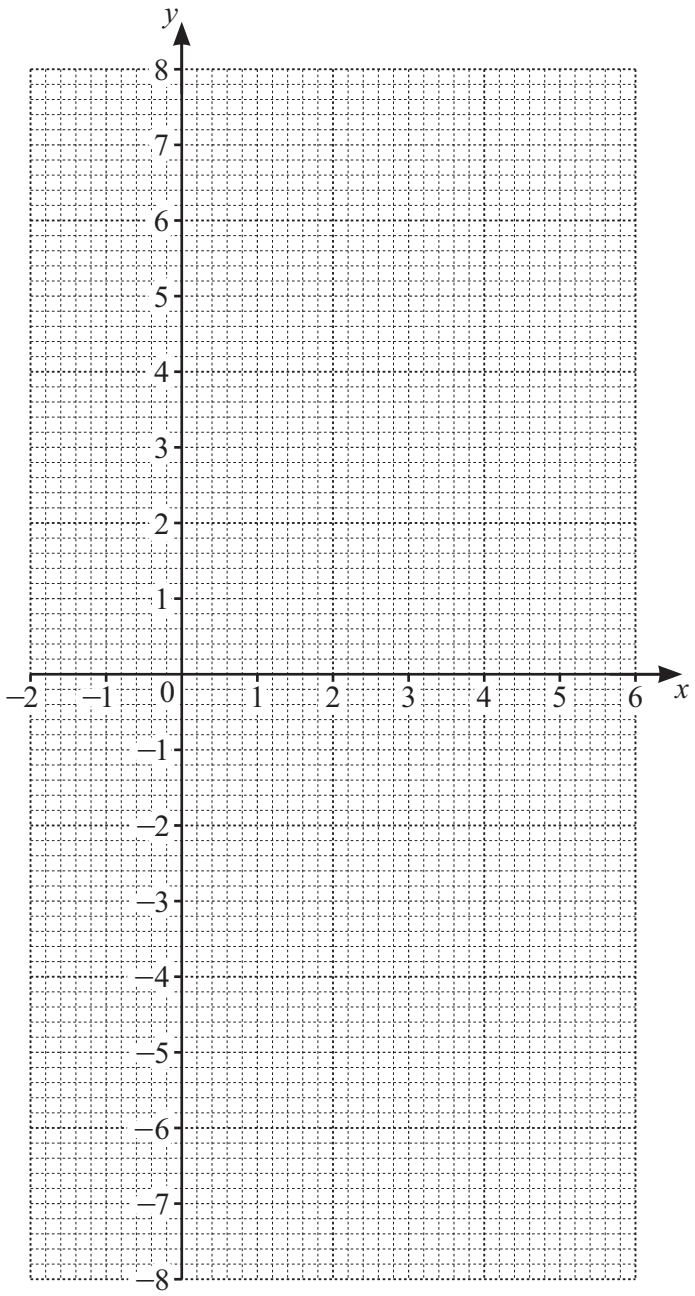
View solution

x	−2	−1	0	1	2	3	4	5	6
y	8		−4		−8		−4		8

[2]

(ii) On the grid, draw the graph of $y = x^2 - 4x - 4$ for $-2 \leqslant x \leqslant 6$.

View solution



[4]

(iii) Write down the equation of the line of symmetry of the graph.

View solution

..... [1]

(iv) Use your graph to solve the equation $x^2 - 4x - 4 = 0$.

View solution

$x =$ ..... or $x =$ ..... [2]

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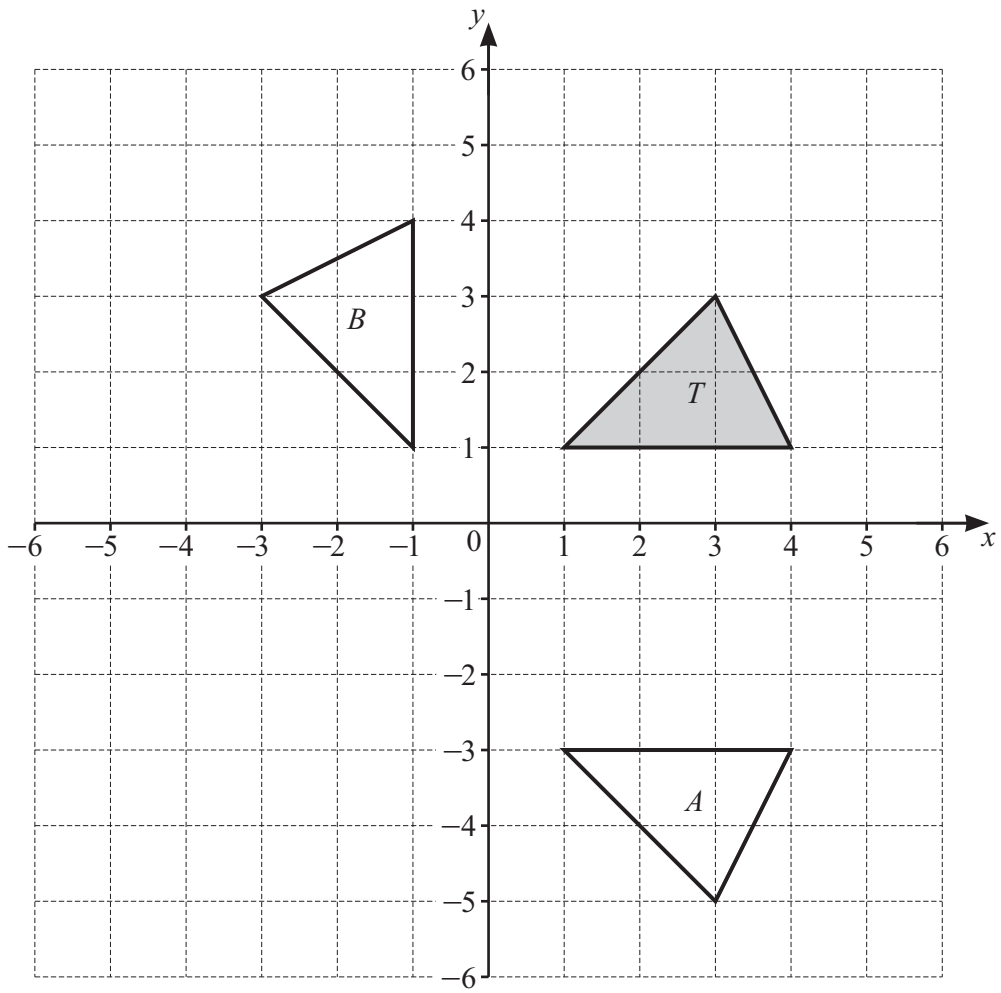
9



View solution

(a) On the grid, translate triangle T by the vector $\begin{pmatrix} -5 \\ -4 \end{pmatrix}$. [2]

View solution

(b) Describe fully the **single** transformation that maps triangle T onto triangle A.

.....

..... [2]

View solution

(c) Describe fully the **single** transformation that maps triangle T onto triangle B.

.....

..... [3]

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